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EXAMINER	
GRIER, LAURA A	

ART UNIT	PAPER NUMBER
2644	

DATE MAILED: 06/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/893,302	WENGER ET AL.	
	Examiner	Art Unit	
	Laura A Grier	2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *69-127* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *69-127* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The indicated allowability of claims 8, 36-37 is withdrawn in view of the newly discovered reference(s) to Matsuo, U. S. Patent No. 6618485, Brandstein et al., U. S. Patent No. 5581620, and Nemirovski, U. S. Patent No. 6671379. Rejections based on the newly cited reference(s) follow.

Specification

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the specification fails to disclose the following: a directional microphone in respect to claims 97-100, 117-119; a silicon microphone in respect to claims 101, 105-120; and the limitation of claims 121-126 in respect to the two speakers and beams formed thereto.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 69-103 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. On page 4 of the

specification, lines 15-19, a position sensor is disclosed for determining the position of a mirror. Claim 69, recites, "a position sensor for determining a position of the microphone array within the vehicular cabin". The specification does not disclose a position sensor to determining the position of the microphone array.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 69-103 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 69, lines 4-5 recite, "the position sensor for determining a position of the microphone array within the vehicular cabin". Even though the specification discloses the microphone array in the rearview mirror, the specification does not explicitly disclose a position sensor to determining the position of the microphone array. Thus the claim language is indefinite in respect to the disclosure of the invention.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this

subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. **Claims 121-126** are rejected under 35 U.S.C. 102(e) as being anticipated by Valve, U. S. Patent No. 6449593.

Regarding **claims 121-122**, Valve discloses a method and system for tracking human speakers (figure 3). Valve's disclosure comprises a microphone array (20) with an output to an far-end (62), which reads on a microphone array, a beamformer (40) coupled to a speaker tracking processor (70) which forms a plurality of microphone beam associated with each human speaker, which reads on a signal processing system (col. 2, lines 53-67 – col. 3, lines 1-2, abstract).

Regarding **claim 123**, Valve discloses everything claimed as applied above (see claim 121). Valve further discloses a speaker detecting processor (70) in the speaker tracking system (10).

Regarding **claims 124-126**, Valve discloses everything claimed as applied above (see claim 121). Valve further discloses a speaker detecting processor (70) in the speaker tracking system (10) comprising means of defining an acceptable are about the speakers, making adjustments thereto and selecting between beams (col. 4, lines 44-67 and col. 5, lines 1-30).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. **Claims 69-70, 73-93, 97-100, 102** are rejected under 35 U.S.C. 103(a) as being unpatentable over Deline et al., U. S. Patent No., 6420975 in view of Matsuo, U. S. Patent No. 6618485.

Regarding **claim 69**, Deline discloses a interior rearview mirror sound processing system. Deline's disclosure comprises a microphone module in which one or more microphones (col. 13, lines 28-30) may utilized, which reads on a microphone array, and a DSP, which reads on a signal processing system (figures 12 and 16, and col. 6, lines 41-64, and abstract). However, Deline fails to disclose a position sensor.

Regarding the position sensor, in a similar field of endeavor, Matsuo disclose a microphone array comprising a position detector (col. 4, lines 44-47).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Deline by implementing a position detector for the purpose of detecting the position of the microphone array, as taught by Matsuo, within the particular environment.

Regarding **claim 70**, Deline and Matsuo discloses everything claimed as applied above (see claim 69). However, Deline and Matsuo fail to specifically disclose the position sensor being a potentiometer. The use of a potentiometer as sensor is well known in the art. Thus, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Deline and Matsuo by implementing a potentiometer for the purpose of sensing the position of a microphone or microphone array.

Regarding **claims 73 and 74**, Deline and Matsuo discloses everything claimed as applied above (see claim 69). Deline further discloses the microphone module mounted to a rearview mirror of a vehicle cabin.

Regarding **claim 75**, Deline and Matsuo discloses everything claimed as applied above (see claim 69). Deline further discloses the microphone module mounted to the headliner of the vehicle (col. 12, lines 43-46).

Regarding **claims 76-83**, Deline and Matsuo discloses everything claimed as applied above (see claim 1). However, Deline fails to disclose the microphone array being positioned in various locations, therein as claimed. It was well known for microphones to be positioned in different areas within a vehicle. Thus, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Deline by implementing microphones (arrays) in different locations is a vehicle for the purpose of providing efficient communication in a vehicle are desired and for the purpose of acquiring optimal noise reduction required and/or desired for a vehicle.

Regarding **claim 84**, Deline and Matsuo discloses everything claimed as applied above (see claim 69). Deline discloses the system being analog as evident by the fact that system process human voices signals (acoustic) input via the microphone module, where the voice signal is subject to A/D conversion (figure 16).

Regarding **claims 85-86, and 94**, Deline and Matsuo discloses everything claimed as applied above (see claim 84 and 93, respectively). Further, Deline obviously disclose the analog system (acoustic as well) performing a delay and sum processing function or a filter and sum processing function, as evident by the fact that system utilizes adaptive beamforming technique

(col. 48, lines 53-63), in which the delay and sum processing function and filter and sum processing functions are essential in beamforming.

Regarding **claim 87**, Deline and Matsuo discloses everything claimed as applied above (see claim 69). Deline further discloses as digital signal processor (DSP).

Regarding **claims 88-89**, respectively, Deline and Matsuo discloses everything claimed as applied above (see claim 87). However, Deline and Matsuo fails to disclose the signal processor performing Griffiths Jim processing or Frost processing, respectively. The examiner takes official notice that Griffiths Jim and Frost processing were well known in art. Thus, it would have been obvious to one of the ordinary skill in the art the time the invention was made to modify the invention of Deline and Matsuo by implement the beamforming processing technique of Griffiths or Frost, wherein, the processing techniques are commonly known and used when processing a beam of an array of microphones for the purpose of improving the directivity and improving the signal-to-noise ratio (noise reduction) of the signal.

Regarding **claims 90-92**, Deline and Matsuo discloses everything claimed as applied above (see claim 87). Further, Deline discloses the system performing adaptive signal processing, adaptive beamforming, and/or adaptive noise reduction, (col. 48, lines 26-63).

Regarding **claim 93**, Deline and Matsuo discloses everything claimed as applied above (see claim 69). Deline discloses the system being acoustic as evident by the fact that system process human voices signals input via the microphone module.

Regarding **claim 97**, Deline and Matsuo discloses everything claimed as applied above (see claim 69). Deline discloses the microphones being directional (col. 13, lines 7-10).

Regarding **claim 98-100**, Deline and Matsuo discloses everything claimed as applied above (see claim 97). Deline obviously discloses the microphone being adjustable and able to maximize directivity as evident by the fact that the microphone is selectively directed between two voices, distinquishing voices between a driver and another occupant (col. 47, lines 41-53).

Regarding **claim 102**, Deline and Matsuo discloses everything claimed as applied above (see claim 69). Deline discloses audible command control of various parameters (col.11, lines 8-14). And, thus Deline obviously discloses the microphone being selectively directed between two commands as evident by the fact that it can distinquish voices between a driver and another occupant (col. 47, lines 41-53).

11. **Claims 71-72** are rejected under 35 U.S.C. 103(a) as being unpatentable over Deline and Matsuo (herein, Deline combination) in view of Brandstein et al. (herein, Brandstein), U. S. Patent No. 5581620.

Regarding **claims 71-72**, Deline combination discloses everything claimed as applied above (see claim69). However, Deline combination fails to specifically disclose the microphone array as multi-dimensional. The examiner maintains that multi-dimensional microphone arrays were well known in the art.

Regarding the multi-dimensional microphone array, in a similar field of endeavor, Brandstein discloses methods and apparatus for adaptive beamforming. Brandstein's disclosure comprises both a two dimensional and three dimensional array system (abstract, col. 4, lines 49-55).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Deline combination by incorporating multi-dimensional microphone arrays for the purpose of picking up sound at various arbitrary positions in a given listening space.

12. **Claims 69, and 95-96** are rejected under 35 U.S.C. 102(e) as being anticipated by Finn et al., U. S. Patent No. 6535609 in view of Matsuo.

Regarding **claims 1, 95-96** Finn discloses a cabin communication system. Finns' disclosure comprises a plurality of microphone arrays, and filters and a summing amplifier coupled to provide beamforming of the microphones (figures 1 and 3, col. 4, lines 12-33, col. 5, lines 4-15, and lines 61-67 and col. 6, line 1), which reads on a plurality of microphone arrays with a plurality of speakers (outputs) and a signal processing system. However, Finn fails to disclose a position sensor.

Regarding the position sensor, in a similar field of endeavor, Matsuo disclose a microphone array comprising a position detector (col. 4, lines 44-47).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Finn by implementing a position detector for the purpose of detecting the position of the microphone array, as taught by Matsuo, within the particular environment.

13. **Claims 101, 105-115, and 117-120** are rejected under 35 U.S.C. 103(a) as being unpatentable over Deline combination in view of Nemirovski, U. S. Patent No. 6671379.

Regarding claim 101, Deline combination discloses everthing claimed as applied above (see claim 69). However, Deline combination fails to specifically disclose a microphone of the microphone microphone array being a silicon microphone.

Regarding the silicon microphone, Nemirovski, discloses a microphone which may be of many different forms including a silicon microphone (col. 7, lines 21-23).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Deline combination by implementing a silicon microphone for the purpose a pressure sensor that is less susceptible to particulates from a pressure sensing environment.

Regarding **claims 105-106**, Deline discloses a interior rearview mirror sound processing system. Deline's disclosure comprises a microphone module in which one or more microphones (col. 13, lines 28-30) may utilized, which reads on a microphone array, and a DSP, which reads on a signal processing system (figures 12 and 16, and col. 6, lines 41-64, and abstract). However, Deline combination fails to specifically disclose a microphone of the microphone microphone array being a silicon microphone.

Regarding the silicon microphone, Nemirovski, discloses a microphone which may be of many different forms including a silicon microphone (col. 7, lines 21-23).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Deline combination by implementing a silicon microphone for the purpose a pressure sensor that is less susceptible to particulates from a pressure sensing environment.

Regarding **claims 107-108**, Deline combination discloses everything claimed as applied above (see claim 105). Deline further discloses the microphone module mounted to a rearview mirror of a vehicle cabin.

Regarding **claim 109**, Deline combination discloses everything claimed as applied above (see claim 105). Deline further discloses as digital signal processor (DSP).

Regarding **claims 110-111**, respectively, Deline and Matsuo discloses everything claimed as applied above (see claim 105). However, Deline and Matsuo fails to disclose the signal processor performing Griffiths Jim processing or Frost processing, respectively. The examiner takes official notice that Griffiths Jim and Frost processing were well known in art. Thus, it would have been obvious to one of the ordinary skill in the art the time the invention was made to modify the invention of Deline combination by implement the beamforming processing technique of Griffiths or Frost, wherein, the processing techniques are commonly known and used when processing a beam of an array of microphones for the purpose of improving the directivity and improving the signal-to-noise ratio (noise reduction) of the signal.

Regarding **claims 112-114**, Deline combination discloses everything claimed as applied above (see claim 87). Further, Deline discloses the system performing adaptive signal processing, adaptive beamforming, and/or adaptive noise reduction, (col. 48, lines 26-63).

Regarding **claim 115**, Deline combination discloses everything claimed as applied above (see claim 69). Deline discloses the system being acoustic as evident by the fact that system process human voices signals input via the microphone module.

Regarding **claim 117**, Deline combination discloses everything claimed as applied above (see claim 69). Deline discloses the microphones being directional (col. 13, lines 7-10).

Regarding **claim 118-119**, Deline combination discloses everything claimed as applied above (see claim 105). Deline obviously discloses the microphone being adjustable and able to maximize directivity as evident by the fact that the microphone is selectively directed between two voices, distinquishing voices between a driver and another occupant (col. 47, lines 41-53).

Regarding **claim 120**, Deline combination discloses everything claimed as applied above (see claim 105). Deline discloses audible command control of various parameters (col.11, lines 8-14). And, thus Deline obviously discloses the microphone being selectively directed between two commands as evident by the fact that it can distinquish voices between a driver and another occupant (col. 47, lines 41-53).

14. **Claims 105 and 116** are rejected under 35 U.S.C. 102(e) as being anticipated by Finn et al. in view of Nemirovski.

Regarding **claims 105 and 116,** Finn discloses a cabin communication system. Finns' disclosure comprises a plurality of microphone arrays, and filters and a summing amplifier coupled to provide beamforming of the microphones (figures 1 and 3, col. 4, lines 12-33, col. 5, lines 4-15, and lines 61-67 and col. 6, line 1), which reads on a plurality of microphone arrays with a plurality of speakers (outputs) and a signal processing system. However, Deline combination fails to specifically disclose a microphone of the microphone microphone array being a silicon microphone.

Regarding the silicon microphone, Nemirovski, discloses a microphone which may be of many different forms including a silicon microphone (col. 7, lines 21-23).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Finn by implementing a silicon microphone for the purpose a pressure sensor that is less susceptible to particulates from a pressure sensing environment.

15. **Claim 127** is rejected under 35 U.S.C. 102(e) as being anticipated by Valve in view of Jenkins, U. S. Patent No. 4725956.

Regarding claim 127, Valve discloses everything claimed as applied above (see claim 121). Valve disclose the system usable in a vehicle. However, Valve fails to specifically disclose the microphone array being responsive to audible commands for controlling a vehicular function.

Regarding the audible command for the vehicular function, Jenkins discloses a voice command air vehicle control system (col. 2, lines 22-40).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Valve by implementing audible voice commands for a vehicle for the purpose of remotely controlling the vehicle.

16. Claims 103-104 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Response to Arguments

17. The applicant did not make any arguments. Remarks were only present in response the amended claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura A Grier whose telephone number is (703) 306-4819. The examiner can normally be reached on Monday - Friday, 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W. Isen can be reached on (703) 305-4386.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

Or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

LAG
June 4, 2004

XU MEI
PRIMARY EXAMINER